

POCKET GOPHERS OF THE GENUS *THOMOMYS*  
(RODENTIA: GEOMYIDAE) FROM THE  
PLEISTOCENE OF FLORIDA

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*Abstract.*—Fossil material of *Thomomys* pocket gophers from the Pleistocene of Florida is reported from three new sites. Mandibular material of *T. orientalis* from its type-locality is described for the first time. Comparison of *Thomomys* specimens indicates conspecificity of material from all four sites. Findings of this study extend the geographic range of extinct *T. orientalis* over much of north-central peninsular Florida; the species is known chronologically from the late Irvingtonian to the middle Rancholabrean.

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The modern distribution of pocket gophers of the genus *Thomomys* is restricted to western and central North America (Hall 1981). However, *Thomomys* species of the subgenus *Plesiothomomys* ranged more widely eastward during the Pliocene and Pleistocene epochs (Kurten and Anderson 1980). Simpson's 1928 paper on the mammalian fauna of the Sangamonian Sabertooth Cave in Citrus County, Florida, contained the first report of *Thomomys* in the eastern United States. Simpson described the Sabertooth Cave species as *T. orientalis*. Extinct *T. potomacensis* material from the Irvingtonian Trout Cave locality in West Virginia and from the Irvingtonian Cumberland Cave in Maryland marks the apparent northeastern limits of the genus.

Recent field activities and re-examination of materials in the Florida State Museum Vertebrate Paleontology Collection at the University of Florida (catalogue numbers preceded by UF) have yielded specimens that allow a better understanding of the systematics and biogeography of Florida *Thomomys*. Additional *T. orientalis* material from Sabertooth Cave was found in the Florida Geological Survey Collection (catalogue numbers preceded by V; housed at the Florida State Museum); this material includes mandibular fragments and lower teeth. Because these materials were not available to Simpson, his description of *T. orientalis* was based solely on upper dentition and cranial features. This paper contains the description of the mandible and lower dentition of *T. orientalis*. Additionally, this paper reports *Thomomys* material from three other fossil localities in Florida.

Localities of *Thomomys* in Florida

*Thomomys* fossils are now known from four deposits in northcentral peninsular Florida, including Sabertooth Cave. The other three deposits, briefly reported by Webb and Wilkins (1984), include the late Irvingtonian Coleman IIA locality (Sumter Co.) and the Rancholabrean sites Williston IIIB (Levy Co.) and Rock Springs (Orange Co.).

Martin (1974) described the geological setting and the mammalian fauna of the Coleman IIA locality, and Ritchie (1980) presented additional paleoecological information for this site. Martin noted the presence in this fauna of one species

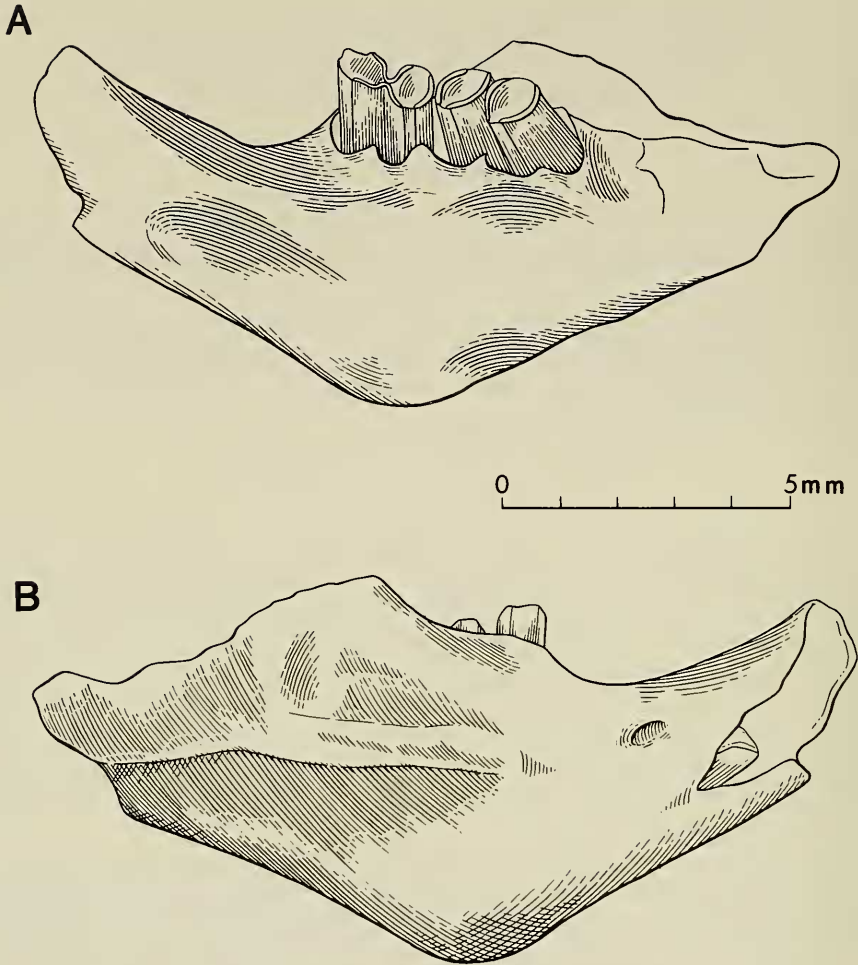


Fig. 1. Medial (A) and lateral (B) views of a right mandibular fragment (V-8657) of *Thomomys orientalis* from the Pleistocene type locality, Sabertooth Cave, Citrus Co., Florida.

of pocket gopher, *Geomys pinetis* (see Wilkins 1984), but not of *Thomomys*. Re-examination of the Coleman IIA geomyid material revealed a left mandibular fragment possessing  $I_1$  and  $M_1-M_2$  (UF 46569) which is referable to the genus *Thomomys* due to the presence of enamel bands on the anterior surfaces of the lower molars (Russell 1968). All other Coleman IIA geomyid material is *Geomys pinetis* with the possible exception of a fragmented edentulous dentary (UF 46570) for which generic identification is not possible. No upper dentition or other cranial material is available for the Coleman IIA *Thomomys*.

Both upper and lower skull material documents *Thomomys* from Williston IIIB, a deposit previously unreported in the literature. Robert A. Martin, who discovered the deposit in 1974 (pers. comm.), states that Williston IIIB was located in the same limerock mining pit as the Williston IIIA deposit described by Holman

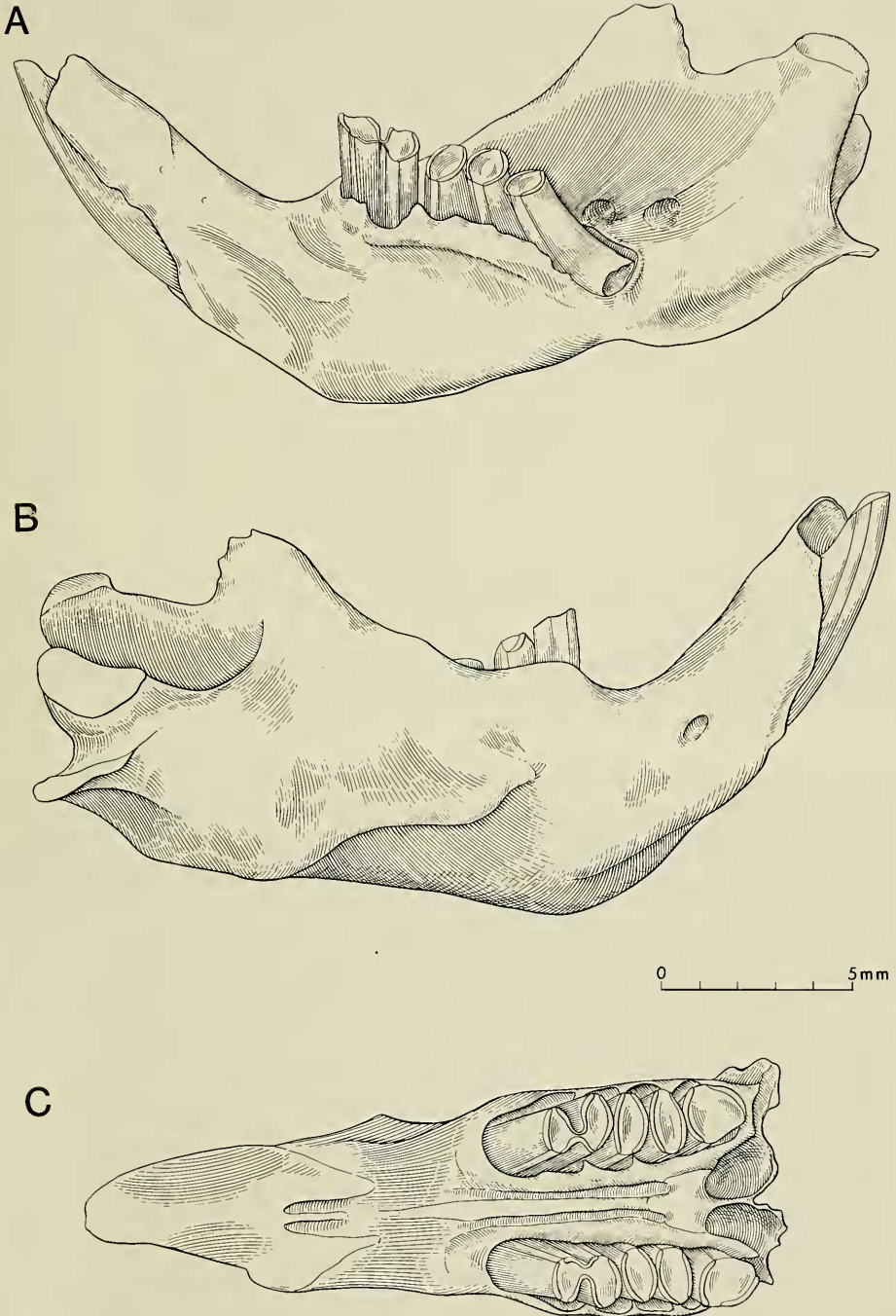


Fig. 2. Medial (A) and lateral (B) views of a right mandible (UF 46572), the most complete mandibular material known for *Thomomys orientalis*, from the Pleistocene Rock Springs locality, Orange Co., Florida. C: a rostral-palatal fragment of *T. orientalis* with complete maxillary dentition (UF 46567); from the Pleistocene Williston IIIB deposit in Levy Co., Florida.

Table 1.—Measurements (mm) of mandibles and lower dentition for 10 specimens of Pleistocene *Thomomys* pocket gophers from Florida.

Site and catalogue number	Length diastema	Dentary width at P <sub>4</sub>	Width I <sub>1</sub>	Width ant. P <sub>4</sub> <sup>1</sup>	Width post. P <sub>4</sub> <sup>2</sup>	Length ant. P <sub>4</sub>	Length P <sub>4</sub>
Sabertooth Cave							
V-8656	7.2	4.9	1.62	—	—	—	—
V-8657	4.9	3.8	—	0.97	1.30	0.91	1.88
Coleman IIA							
UF 46569	7.9	4.9	1.67	—	—	—	—
Williston IIIB							
UF 46568	6.4	4.7	1.45	1.18	1.67	1.10	2.08
Rock Springs							
UF 46572	7.0	5.3	1.4	1.29	1.69	1.27	2.40
UF 46573	7.1	5.2	1.4	1.21	1.82	1.30	2.40
UF 46574	5.5	4.5	1.4	1.29	1.80	1.37	2.47
UF 46576	6.2	4.5	1.5	1.21	1.79	1.27	2.43
UF 46571	7.7	4.8	1.4	—	—	—	—
UF 46575	5.1	3.9	1.1	—	—	—	—
Range	5.1–7.7	3.9–5.3	1.1–1.5	1.21–1.29	1.69–1.82	1.27–1.37	2.40–2.47

<sup>1</sup> “ant.” denotes anterior.

<sup>2</sup> “post.” denotes posterior.

<sup>3</sup> “RMF” denotes retromolar fossa, the depression located posterior to M<sub>3</sub> and medial to the ascending ramus into which the temporalis muscle inserts.

(1959). Mining operations destroyed both sites after recovery of fossils. One left mandible with I<sub>1</sub>–M<sub>1</sub> (UF 46568) is assigned to the genus *Thomomys* due to the presence of an anterior enamel band on M<sub>1</sub>. Presence of a complete enamel band on the posterior surface of the P<sub>4</sub>'s, as well as the nearly circular occlusal outlines of the M<sub>3</sub>'s, indicates that a rostral-palatal fragment with left and right P<sub>4</sub>–M<sub>3</sub> (UF 46567) should also be referred to *Thomomys*. *Geomys pinetis* is also present among the Williston IIIB fossils excavated by Martin (Wilkins 1984).

Two pocket gopher genera also occurred in the fauna of the Rock Springs stream deposits (Wilkins, in press). A single P<sub>4</sub> (UF 49205) documents the presence of *Geomys pinetis*. *Thomomys* was perhaps the more abundant gopher at Rock Springs as suggested by its representation by a greater number of specimens: six mandibles with partial to complete dentition (UF 46571–46576). Other papers treating aspects of the Rock Springs fossil vertebrate fauna include Gut (1939), Woolfenden (1959), Auffenberg (1963), Ray et al. (1963), and Webb (1974).

The holotype of *Thomomys orientalis* from Sabertooth Cave is the “front part of” a “skull with incisors and first two cheek teeth on each side” (Simpson 1928). Simpson's description did not address lower dentition or mandibular features. *Thomomys* specimens recovered from Sabertooth since the original species description include fragments of two right mandibles (V-8656 possessing only the incisor and V-8657 with P<sub>4</sub>–M<sub>2</sub>), five isolated M<sub>3</sub>'s (V-8651–8655), nine isolated P<sub>4</sub>'s (V-8660–8668), and eight isolated P<sub>4</sub>'s (V-8669–8676). The more complete of the two Sabertooth Cave mandibles, V-8657, is depicted in Fig. 1. The molars



Table 1.—Extended.

Length M1	Width M1	Length M2	Width M2	Length M3	Width M3	Alveolar distance P4-M2	Depth RMF <sup>3</sup>	Age
—	—	—	—	—	—	4.9	0.5	adult
0.90	1.52	1.06	1.43	—	—	4.0	—	subadult
1.12	1.85	1.28	1.78	—	—	4.8	c. 0.4	adult
1.06	1.82	—	—	—	—	4.4	c. 0.4	adult
1.11	1.86	1.23	1.79	1.17	1.42	—	0.5	adult
1.18	2.00	1.30	1.92	—	—	—	—	adult
1.13	1.86	1.36	1.84	—	—	—	0.8	adult
1.17	1.94	—	—	—	—	—	—	adult
1.17	2.21	—	—	—	—	—	0.9	adult
—	—	—	—	—	—	—	0.8	subadult
1.11-1.17	1.86-2.21	1.23-1.36	1.79-1.92				0.5-0.9	

of this subadult specimen possess anterior enamel bands, a feature distinguishing *Thomomys* from *Geomys*, which is also represented at this site.

#### Comparison of Florida *Thomomys* Material

*Thomomys* specimens from these four Pleistocene sites are similar in qualitative features. All specimens are consistent with the patterns of enamel band deployment on cheekteeth diagnostic of the genus *Thomomys* (Russell 1968). Furthermore, occlusal surface outlines of the cheekteeth from all four deposits demonstrate the smooth ovate ("sub-crescentic") outline of the subgenus *Plesiothomomys* rather than the labial (upper cheekteeth) or lingual (lower) constrictions (i.e., "pear shape") characteristic of the subgenus *Thomomys* (see Russell 1968:519).

Mensural comparison of mandibular and lower dentition features also indicates great similarity of specimens from these four deposits. Using a Gaertner measuring microscope or Helios dial calipers as appropriate, as many as possible of fifteen characters (see Wilkins 1984) were measured for ten mandibular specimens (Table 1). Rock Springs offers the largest sample ( $n = 6$ ). The small size of the other three samples coupled with the fragmentary nature of most specimens precludes statistical analysis of data. Yet, there is high similarity and, in some features, considerable overlap in values among some or all samples. The greatest discrepancies, shown by Sabertooth specimen V-8657 and Rock Springs specimen UF 46575, can be attributed to their younger ontogenetic ages as indicated by incisor width and by other features. Using incisor width as an indicator of ontogenetic age in pocket gophers, Wilkins (1984) demonstrated the necessity of making quantitative morphological comparisons only among samples containing individuals of similar age because many osteological and dental features vary significantly with age.

Although the two subadult specimens differ quantitatively from the adult specimens, the subadults are similar to each other in mensural values. Sexual dimorphism is another likely contributor to the variation seen among these samples.

The preceding comparisons suggest that the *Thomomys* specimens from Coleman IIA, Williston IIIB, and Rock Springs are not morphologically distinct from the Sabertooth Cave material. All *Thomomys* material from these four Pleistocene sites is, therefore, referred to *Thomomys orientalis*. The most complete mandibular material of this species that is currently available from the Florida Pleistocene is a nearly complete right dentary (lacking only a portion of the coronoid process) with full dentition (UF 46572; Fig. 2A, B). The complete left and right upper cheektooth dentition of *T. orientalis* is represented in the rostral-palatal fragment (UF 46567) of an adult from Williston IIIB (Fig. 2C); features shared by this specimen and the holotype (AMNH 23441) from Sabertooth Cave are very similar. Therefore, the range of *T. orientalis* is extended geographically to include much of north-central peninsular Florida. The chronological distribution of *T. orientalis* spans at least that portion of the Pleistocene from the late Irvingtonian to the middle Rancholabrean.

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#### Literature Cited

- Auffenberg, W. 1963. The fossil snakes of Florida.—*Tulane Studies in Zoology* 10:131–216.
- Gut, H. J. 1939. Hitherto unrecorded vertebrate fossil localities in south-central Florida.—*Quarterly Journal of the Florida Academy of Sciences* 3:50–53.
- Hall, E. R. 1981. *The mammals of North America*.—John Wiley and Sons, New York. 1181 pp.
- Holman, J. A. 1959. Birds and mammals from the Pleistocene of Williston, Florida.—*Bulletin of the Florida State Museum* 5:1–24.
- Kurten, B., and E. Anderson. 1980. *Pleistocene mammals of North America*.—Columbia University Press, New York. 442 pp.
- Martin, R. A. 1974. Fossil mammals from the Coleman IIA fauna, Sumter County. *In* S. D. Webb, ed., *Pleistocene mammals of Florida*. Pp. 35–99.—University Presses of Florida, Gainesville.
- Ray, C. E., S. J. Olsen, and H. J. Gut. 1963. Three mammals new to the Pleistocene fauna of Florida, and a reconsideration of five earlier records.—*Journal of Mammalogy* 44:373–395.
- Ritchie, T. L. 1980. Two mid-Pleistocene avifaunas from Coleman, Florida.—*Bulletin of the Florida State Museum* 26:1–36.
- Russell, R. J. 1968. Evolution and classification of the pocket gophers of the subfamily Geomyinae.—*University of Kansas Publications, Museum of Natural History* 16: 473–579.
- Simpson, G. G. 1928. Pleistocene mammals from a cave in Citrus County, Florida.—*American Museum Novitates* 328:1–16.
- Webb, S. D. (ed.) 1974. *Pleistocene mammals of Florida*.—University Presses of Florida, Gainesville. 270 pp.

- , and K. T. Wilkins. 1984. Historical biogeography of Florida Pleistocene mammals. *In* H. H. Genoways and M. R. Dawson, eds., *Contributions in Quaternary vertebrate paleontology: A volume in memorial to John E. Guilday*. Pp. 370–383. Special Publication No. 8, Carnegie Museum of Natural History.
- Wilkins, K. T. 1983. Pleistocene mammals from the Rock Springs local fauna, central Florida.—*Brimleyana* 9:69–82.
- . 1984. Evolutionary trends in Florida Pleistocene pocket gophers (genus *Geomys*), with description of a new species.—*Journal of Vertebrate Paleontology* 3:166–181.
- Woolfenden, G. E. 1959. A Pleistocene avifauna from Rock Springs, Florida.—*Wilson Bulletin* 71: 183–187.

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